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U. S. DEPARTMENT OF AGRICULTURE.

FEDERAL HORTICULTURAL BOARD.

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SERVICE AND REGULATORY ANNOUNCEMENTS.

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GENERAL NOTES.

THE PINK BOLLWORM WORK IN TEXAS.

The work of clean-up of the illegally planted fields in the Trinity Bay quarantine district in eastern Texas is now approaching completion. The inspection work of this fall and winter has developed no pink bollworm infestation whatever in volunteer cotton or in fields illegally planted in the quarantine areas, nor has any infestation by this insect been found in the United States this year other than the new points mentioned in western Texas in the last number of these announcements. The eradication of the infested cotton in these new fields is being pushed as rapidly as possible. [illegible]k has been delayed somewhat by shortage of labor and by very inclement weather.

REVISION OF THE TEXAS PINK BOLLWORM LAW.

The Legislature of Texas, now in session, has before it for consideration a revision of the act of 1917 designed to prevent the establishment and spread of the pink bollworm in that State. The development of the pink bollworm

situation in Texas has necessitated a modification of the original act, adding to its powers and, at the same time, making it more flexible. The revision will particularly provide for the planting and growth of cotton under restriction, where such proceeding can be safely recommended in lieu of absolute prohibition. Other changes will be made to correct minor defects in the act of 1917.

AEROPLANE EMPLOYED BY FEDERAL HORTICULTURAL BOARD TO LOCATE COTTON FIELDS IN SWAMPY AND WOODED DISTRICTS IN TEXAS.

That it is possible to use the aeroplane in a practical way for the location of cotton fields in connection with the inspection and control work against the pink bollworm was demonstrated by the Federal Horticultural Board last year. Advantage was taken of an offer to try out the aeroplane for such scouting work, and by this means some seven outlaw cotton fields which had escaped discovery theretofore by inquiries and travel over the practicable roads were located by Inspector Hensley, of the board, in heavy timber along the Trinity River in the quarantined district surrounding Galveston Bay.

The similar exploration and control work which is being conducted this fall and winter has resulted largely from the interest of Second Lieut. Harold Compere, of the Aviation Service of the Signal Corps of the Army. Lieut. Compere is a son of George Compere, one of the world's great entomological explorers and for many years connected with the plant quarantine and inspection service of the State of California, and also acting as a collaborator in plant-inspection work for this department.

Lieut. Compere has been located at the Ellington Field, Houston, Tex., situated in the center of the cotton-growing district infested with the pink bollworm, and has become familiar with the general needs of the survey work. After discussing the possibilities with Dr. W. D. Hunter, a member of the Federal Horticultural Board, in charge of the field work against the pink bollworm in Texas, Lieut. Compere became convinced that practical use could be made of his training as an aviator in connection with his scientific interest and training in entomology, and that the aeroplane would tremendously facilitate the scouting for the location of cotton fields, both within and outside of the quarantined areas. This territory includes wide stretches of more or less swampy forested tracts, in which occasional small patches of cotton are being grown, and which in the dearth of roads and resulting inaccessibility are very difficult to locate.

Mr. Compere made an application to the commanding officer of Ellington Field for permission to engage in such work. This request was disapproved, but with the suggestion that the request should be referred, with the indorsement of this department, to the Division of Military Aeronautics, War Department. This was done, with the result that Lieut. Compere received from the War Department full authority to undertake the work of locating cotton fields in the observation zone.

Shortly after this work was instituted Lieut. Compere received his honorable discharge from the National Army, but before leaving he selected an aviator from the Ellington Field Service to take his place, Second Lieut. William H. Tillisch. This work, begun January 14 by Lieut. Compere, is now in regular progress, Inspector Hensley accompanying the aviator except for two flights made about January 21 by Mr. Carl Heinrich, an expert of the Board.

The test of last year, followed by this more important and systematic utilization of this new means of survey and inspection, marks, possibly, the first use of the aeroplane in a practical way in agriculture, and may be the starting of a new use of this means of transportation and observation for other agricultural and forestry survey work.

SHIPMENTS OF CRANBERRY VINES MAY CARRY GIPSY MOTH.

It has been known for some time that the gipsy moth larvæ are carried by winds from surrounding forests into cranberry bogs in New England. The shipments of vines from such bogs for planting in other parts of the United States might therefore very easily be the means of wide dissemination of this forest pest. For several years past all shipments of vines have been safeguarded by careful inspections conducted by the moth service of the Bureau of Entomology in cooperation with this board. To make sure that prior to such examinations, or in spite of them, the gipsy moth had not been carried to Michigan, Wisconsin, and Pacific coast points with such cranberry stock, Mr. D. M. Rogers, in charge of gipsy-moth inspection, was authorized to inspect all of the bogs in these Northern and Western States which had received planting stock from New England to determine their freedom from gipsy moth. Mr. Rogers has recently submitted a report on this trip of last fall, to the effect that no evidence was found of the presence of the gipsy moth in any of these bogs. In this connection, Mr. Sasscer is conducting tests, in cooperation with Mr. Burgess, to determine both the resistance of cranberry vines to intensive fumigation and the strength of fumigation necessary to destroy the eggs of the gipsy moth.

NECESSITY OF DISINFECTION OF RAILWAY CARS WHICH HAVE BEEN USED FOR CONVEYANCE OF FRESH PLANT MATERIAL.

The possibility of railway cars used for hauling vegetables, fruit, and other plant products being the means of distributing noxious insects has been emphasized by recent reports coming to the board. The most striking of these is from Mr. Frederick Maskew, who reports the finding by an inspector October 11, 1918, at Los Angeles, Cal., of a number of active Colorado potato beetles in connection with potatoes from Idaho Falls, Idaho. These potatoes came from a region where the potato beetle is not known to exist, and investigation disclosed the fact that this car had been loaded with potatoes in August in Colorado, delivered its consignment in Oklahoma, and then went as an empty to Kansas City, thence to Granger, Wyo., and ultimately to Idaho Falls, where it was loaded again with potatoes and sent to Los Angeles. The potato beetles, evidently taken on in numbers with the original shipment from Colorado, remained during this entire movement. The inspectors of the board are requested to use such opportunities as they have to make examinations of empty cars used for the transportation of such materials and report findings. Steps are being taken to secure some action through railroad authorities looking to the cleaning of all such cars at point of unloading.

BALLAST A POSSIBLE MEANS OF INTRODUCING NOXIOUS INSECTS AND PLANTS.

The attention of the board has been drawn to a new and perhaps serious source of risk of entry of undesirable plants and plant products in earth ballast being dumped along the shores of the Hudson River and other localities from vessels entering New York. An inquiry has been started to determine the extent of this risk. That it is considerable is evident from the fact that some study has already been made by Dr. Arthur Hollick, director of the Museum of the Staten Island Association of Arts and Sciences, on foreign plants introduced through this means. There is a possibility through this means of the introduction of any soil-infecting disease or of injurious nematodes as well as hibernating insects.

MEMORANDUM CONCERNING QUARANTINE NO. 37, RESTRICTING THE IMPORTATION OF NURSERY STOCK AND OTHER PLANTS AND SEEDS ON AND AFTER JUNE 1, 1919.

[This memorandum was drawn up to be used in answering numerous inquiries which have been received relative to Quarantine No. 37. It was published in the Congressional Record for January 30, 1919, pp. 2464 to 2466. It gives a history of the steps leading up to the promulgation of Quarantine No. 37 and recounts the conditions which necessitated the rather far-reaching restrictions which will be placed on the importation of nursery stock and other plants and seeds, beginning June 1, 1919. Quarantine No. 37 was published with regulations in S. R. A. for October–November, 1918, pp. 101 to 110.]

STEPS LEADING TO THE QUARANTINE.

The need for additional restrictions on the importation of nursery stock and other plants and seeds has been under careful consideration by the board for several years. This need has been emphasized by numerous requests and resolutions urging greater restrictions on plant importations received from officials and associations representing State departments of agriculture, State nursery inspectors, and official entomologists and plant pathologists of the United States. Similar requests have been received from National and State forestry, horticultural, and other allied associations, and from many leading nurserymen and florists. As a basis for such additional restrictions a public hearing was conducted at this department May 28, 1918, and the proposed restrictions were thoroughly discussed with all the interests involved, including both importing nurserymen and seedsmen, as well as leading producing nurserymen and florists.

Following this hearing and at the request of the board the subject was given careful study in all of its phases by the plant experts of the Department of Agriculture over a period of several months, in the course of which many of the principal nursery and florist establishments of the United States were visited by these experts and the details of the proposed quarantine were discussed with the persons in charge of these establishments. As a result of this extended inquiry a tentative draft of proposed regulations was formulated and submitted to the principal nurserymen of the country. A final conference was then held in the office of the chairman of the board October 18, 1918, at which all interested parties were invited to submit criticisms or suggestions either in person or by letter. The quarantine and regulations as promulgated represent, therefore, the best judgment of the plant experts of this department based on this extended consideration of the entire subject.

OBJECTIONS RAISED IN RECENT LETTERS OF PROTEST.

Recently numerous letters have reached the department protesting against the enforcement of the quarantine. Practically all of these letters are in response to a printed circular entitled "Protest Against the Horticultural Import Prohibition," signed by Henry A. Dreer, of Philadelphia, and sent to nurserymen all over the country. Most of the letters received simply repeat the statements contained in Mr. Dreer's circular letter.

In that letter reference is made to what is considered inconsistencies in the regulations in that they permit the entry of rose stocks for propagation and of six varieties of bulbs, while they exclude budded or grafted roses and all bulbs with the exception of the six varieties referred to.

During the period when the quarantine was under discussion the Federal Horticultural Board was urged very strongly by many advisors, including horticultural and forestry associations and State plant inspectors and their organizations and many American growers, to prohibit the importation of all nursery stock and other plants, on the ground that all such plants are sources of risk of introducing dangerous insects and plant diseases.

Such dangers do exist. They are greatest in importations from little-known countries, many of which do not maintain any system of inspection. The dangers are proportionally greater among the miscellaneous classes of nursery stock and other plants, including bulbs, which are imported in smaller quantities, but which represent numerous genera and species and may bring in a corresponding number of new plant pests.

While complete exclusion undoubtedly affords the greatest measure of safety, the governing principle in the quarantine is to limit plant introductions to the

classes of plants which have been represented by the plant interests concerned in this country as being essential to plant production, in other words, the raw material out of which salable fruit trees, roses, etc., are made. To these were added certain classes of plants, including bulbs and seeds, which could be reasonably safeguarded by inspection and disinfection.

In the case of rose stocks, the distinction between stocks on the one hand and budded or grafted roses on the other was made with a view to limiting importations largely to such stocks as are usually grown in commercial nurseries where special care is exercised to control and eradicate pests. The stocks permitted entry under item 3 of regulation 3 are practically always grown in commercial nurseries, while budded and grafted rose plants may, immediately upon their arrival in the United States, be shipped broadcast over the country to consumers who pay little or no attention to the eradication of any insects or diseases the plants may carry. Rose stocks, furthermore, as imported are seldom more than 1 year old, whereas the finished rose plants are 2 years or more old and consequently correspondingly more likely to be the means of introducing pests.

With respect to bulbs, it was realized that a danger existed, and the entry was restricted to classes of bulbs least subject to risk of bringing in new pests and which from their nature could be most readily inspected and determined as clean. The excluded bulbs involve the less-important and miscellaneous importations coming from widely scattered sources, and the entry of which is attended with much greater risk of introduction of plant diseases and insect pests.

Provision is made in the quarantine for the entry in limited quantities of these prohibited bulbs and other plants, through the Office of Foreign Seed and Plant Introduction of this department, for the purpose of keeping the country supplied with new varieties and the necessary propagating stock—such entry necessarily being safeguarded by the highly developed inspection and quarantine service now organized by this department. It is impracticable to give this type of inspection to commercial importations. The cost would be prohibitive, especially under conditions which would require very frequent provision for holding the imported material in quarantine for a period of months or years, and the necessity for very high-grade and expert inspectors. Furthermore, inspectors with the training required for this critical work are not available for handling importations of these restricted classes of plants on a commercial scale.

Mr. Dreer's letter also conveys the impression that at the hearing and subsequent conference the information given the board was against the advisability of putting the quarantine into effect. On the contrary, at the hearing of May 28, which was largely attended and of which a stenographic record was kept, the argument was strongly in favor of the quarantine, and, as indicated in the early part of this statement, the restrictions which have been embodied in this quarantine were strongly urged and indorsed both by many representatives of the nursery trade and unanimously by letters received from officials representing the forest, agricultural, and horticultural interests of the Nation. The conference on October 18 was especially to give opportunity to the small body of commercial importers to discuss the restrictions provisionally determined upon in the regulations which would directly affect their interests, and this discussion, therefore, naturally brought into prominence these objections. On the other hand, important producing nurserymen and florists, both in person and by letter, strongly supported the restrictions as then presented and finally adopted.

The argument presented that this quarantine is unjust to European countries, particularly at this time when they are just released from the restrictions on commerce caused by the war, has weight only in the keen sympathy we all feel, especially for Belgium and France. If, however, there are important dangers to be guarded against, and therefore a real need for these restrictions, mere sentiment, however strongly warranted, has no place. In point of fact, with respect to the two countries which have suffered most from the war—France and Belgium—the latter is the only one which is seriously affected by this quarantine. The plant exports of France are largely fruit-tree stocks which are still permitted entry. Unfortunately the plant exports of Belgium are largely ornamentals shipped with earth about the roots and are, therefore, the ones which entail greatest risk to the United States. The inspection service of Belgium is inferior also to that of both France and Holland. In the case of Holland the argument from the war standpoint does not apply to the same extent,

and furthermore, the bulb exports of Holland are not materially interfered with. The potted and balled plants, however, from Holland convey the same dangers that they would from Belgium and other foreign countries, and are accordingly excluded.

With respect to this action as to European countries, it may properly be noted that this quarantine merely places the United States in more close alignment with—but still behind—the action long since taken by these countries relative to plant imports from the United States. France, Holland, Germany, and to a less extent Belgium, have long maintained practically complete prohibition of plant imports from the United States.

CONDITIONS NECESSITATING THE QUARANTINE.

FOREIGN INSPECTION AND CERTIFICATION SERVICE INADEQUATE.

With regard to the actual condition of nursery stock and other plants hitherto received from foreign countries, it is appreciated that the countries which have been most concerned in such exports to the United States have established inspection and certification service, which have very greatly reduced the amount of infestation on such exported plants. The conditions in this respect, prior to the passage of the plant-quarantine act and the requirement of inspection and certification on the part of foreign countries, and the rigorous holding of these countries up to as high standard as possible, were deplorable. Brown-tail moth nests and gipsy moth egg masses and numerous other insect pests in various stages were coming into the United States in quantity, and in one season thousands of such brown-tail moth nests were found in nursery stock, particularly from Holland, Belgium, and France. The improvement since the establishment of this service, as indicated, has been very great, but it has not by any means eliminated the danger.

Of these principal export countries Holland has perhaps as good an inspection service as any, if not the best. The status as to freedom from insects and diseases of plant imports from Holland probably represents the best work that can be expected under existing conditions of inspection and certification on the part of the country of export. Notwithstanding the supreme effort of the Netherlands Government to safeguard its plant exportations to the United States, a great many injurious insects have been found on stock imported from that country since August, 1912, when the Federal plant quarantine act became effective. During this period of six years of enforcement of this act no less than 148 different species of injurious insects have been collected on nursery stock imported from Holland. Some of these have been found in over 1,100 different shipments of plants. Many others have been detected hundreds of times. It is true that many of these are insects which have already become established in the United States, but many others are insects which have not been so established and which are new elements of danger to the horticulture and agriculture of this country. For example, the European tussock moth (*Notolophus antiqua*) has been found in connection with no less than 67 different shipments of plants from Holland, representing over 16 different kinds of ornamental plants. Similarly, many other injurious leaf-feeding and wood-boring insects have been collected on from one to many different shipments of plants.

SOIL WITH POTTED AND BALLED PLANTS A SPECIAL SOURCE OF DANGER.

The list of 148 different kinds of insects on Holland stock includes comparatively few of the soil-infesting species, because it has not been possible without destruction of the plants to disintegrate and make adequate examination of the soil imported with balled and potted plants. The danger is probably much greater from such insects concealed in the soil than it is from the insects which are found on the aerial portion of the plants. Dr. T. J. Headlee, New Jersey State entomologist, reported at the hearing conducted by this department in May, 1918, on the subject of this quarantine, that two years before his office had made a limited study of the insect fauna in balled plants from Europe and a short examination of perhaps two dozen balled plants had resulted in the finding of over 20 different species of insects in the soil.

There is risk of entry from foreign countries through the medium of such soil of a vast number of insects, many of which may have no relation to the plants imported, but are possibly important enemies of field crops, such as

clover, alfalfa, and other forage crops and the grains. For example, there are more than a score of European weevils and root borers known to infest clover, alfalfa, and related plants. Several of these have already been introduced into this country and are now among our most serious forage insect pests. Examples of these are the alfalfa weevil now invading half a dozen States surrounding Utah, its point of introduction, and the clover-leaf weevil, now widely distributed throughout the United States. Of the same nature are many insects which affect common truck crops. Several of these have already been introduced with plants imported with soil, such as the European mole cricket, the European earwig, and various wireworms. The list of such European truck-crop insects possible of introduction with soil is a very long one. There are also many important European fruit insects which can be introduced with soil about the roots of nursery stock. These include apple, pear, and plum weevils, fruit and bud weevils, twig and stem borers, and various leaf-feeding insects which hibernate in the soil.

With respect to plant material which it is necessary to bring in with soil, it should be borne in mind also that no system of effective disinfection of the soil about such plants without destroying the plants is known.

PLANT PESTS OF ORIENTAL COUNTRIES.

The risk from importations from oriental countries and other quarters of the world where the insect enemies and diseases of plants have been very meagerly studied is illustrated by the establishment in this country from such sources of many of our most important injurious insect pests and plant diseases. Few of these were known prior to their appearance in this country, and therefore could not specifically have been looked out for and guarded against.

INTRODUCED ORIENTAL INSECTS.

Among insects introduced from the Orient are the San Jose scale, the citrus white fly, the oriental peach moth, and the Japanese beetle. The peach moth and the Japanese beetle, furthermore, illustrate insects which it is apparently impossible to kill by any practicable fumigation in their hibernating condition.

The list of insects introduced from such little-explored countries is already very large, and the new pests constantly being intercepted on plant stock now coming in represent a constant and very serious menace to this country. A recent illustration of this state of affairs came in last month's report of Mr. E. M. Ehrhorn, a collaborator of the board and chief of the division of plant inspection of the Board of Commissioners of Agriculture and Forestry of Hawaii. Mr. Ehrhorn states that in December, 1918, he made a thorough examination of two small pots of a dwarf Chinese arborvitæ (*Thuya orientalis*) offered for entry at Honolulu, and took from the soil about the roots of these plants no less than 122 grubs of a curculionid beetle, a near relative of such injurious insects as the alfalfa weevil, plum and apple curculio, etc.

INTRODUCED PLANT DISEASES.

The danger of introducing plant diseases is just as great, if not greater, than that of introducing new insect pests, and, with respect to such diseases, inspection is a safeguard of no importance. Very often these diseases are not discoverable by inspection or may develop to a visible stage only after a period of months or years after the plants have been imported. Notable examples of such diseases received from the Orient are the chestnut blight and citrus canker from Japan and China. Regarding the risk of introduction of dangerous diseases from Europe, it is significant that of the three serious forest diseases that have been imported into this country in recent years, two of them, the white-pine blister rust and the European poplar canker, have come from Europe, where both these diseases are well known, and in spite of the protection of the European inspection service.

MANUALS OF FOREIGN INSECTS AND PLANT DISEASES.

A manual describing the dangerous insects likely to be introduced into the United States has recently been published by the Department of Agriculture. It was designed for the information of Federal and State inspectors, and enumerates and describes over 3,000 distinct insect pests. Probably half of these are Old World insects injurious to forest and shade trees, and the balance

insects injurious to fruit and ornamental trees and to the various farm and garden crops. A similar manual is in preparation on the fungous diseases of plants likely to be introduced into the United States.

LOSSES CAUSED BY INTRODUCED PESTS.

In this discussion the actual losses now being suffered from plant enemies, insect and disease, which have been introduced from foreign sources have not been considered. These losses to agriculture in this country have been carefully worked out by experts to cover both the actual damage of these pests to the crops concerned and also the cost of the control operations. This is not the place for an extended discussion, but a few illustrations may be given.

EXAMPLES OF INSECTS IMPORTED WITH PLANTS.

Typical examples of insect pests introduced with nursery stock or other plant material are the San Jose scale, the oriental peach moth, and the Japanese beetle. The San Jose scale has been in this country for certainly 40, and perhaps 50, years. It became widespread throughout the United States in the late nineties, and at the present time there is practically not a commercial deciduous orchard in the United States that it is not necessary to spray at least once annually to control this pest. The expenditures for apparatus and spraying alone in the United States amount to approximately $10,000,000 annually. In addition to this are the losses which the insect causes in spite of this control treatment, and they are very large, especially in small orchards and household plantings, where spraying is not always practiced. This insect alone undoubtedly has cost this country during these years upward of $100,000,000.

The oriental peach moth, which gained entry in 1912 with imported ornamental cherry trees from Japan, has just begun its spread and depredations. It affects practically all deciduous fruits and bids fair to be a much more destructive pest in the long run than the San Jose scale.

The Japanese beetle, brought in about the same time as the peach moth, has already obtained such firm foothold that, in view of its habits and powers of prolonged flight, it is probably incapable of extermination and will, no doubt, ultimately overspread the United States. It attacks not only practically all fruits, but also many garden vegetables and corn. The amount of damage which it will ultimately cause to American agriculture is undoubtedly tremendous. It is worthy of note that this beetle, in the opinion of the experts of this department and of the State of New Jersey who have investigated the matter, was brought in by the Dreer Nursery with importations of iris from Japan. The insect first appeared in the heart of the Dreer Nurseries and has spread from this center over an area approximately of 25,000 acres, involving four townships in New Jersey, opposite Philadelphia.

The annual cost to this country of the San Jose scale and the probable ultimate annual cost of these other two more recently introduced oriental pests would probably pay for the total importations since the foundation of this Republic of ornamental, nursery, and florist stock. The declared value of the importation of such stock for the year 1914 was only $3,606,808, and it should be understood that the plant stocks still permitted entry represent much of this value.

These insects are mere examples of a vast horde of introduced insect pests. Upward of 100 different important injurious insects to agriculture and forestry have been thus introduced, and in addition to these, hundreds of other minor insect pests. The total annual loss occasioned by these introduced insect pests to our national forests and to farm crops, etc., from careful estimates which have been made, very much exceeds a million dollars a day; in other words, approximately $500,000,000 a year.

It is true that many of these foreign insect pests have come in independently of nursery stock as, for example, the Hessian fly, the pink bollworm of cotton, and European corn borer. Nevertheless the bulk of the introductions have been with living plant material of all sorts.

EXAMPLES OF DISEASES IMPORTED WITH PLANTS.

Losses correspondingly large are chargeable to introduced plant diseases. Nursery stock and other plant importations are responsible for the entry of such important diseases as the chestnut blight which has already destroyed the

chestnut forests over much of eastern United States and threatens the existence of the entire chestnut growth of the country, the white pine blister rust, a disease already widespread in the eastern white pine area, and the citrus canker recently introduced from Japan and Asia and now threatening the very existence of much of the American citrus development of Florida and the Gulf coast. The attempt in Florida and elsewhere in the United States to eliminate this disease has necessitated the burning of nurseries and hundreds of established orchards. Giant oil torches have been devised which will lick up and utterly consume large fruiting trees in a few minutes and entire orchards in a few days. This means the destruction of property representing thousands of dollars of expenditure and years of labor. Furthermore, Congress has appropriated, and is still appropriating, considerable sums to aid in the control of these pests.

INADEQUACY OF SPECIAL QUARANTINES.

To prevent the entry of like plant pests quarantines and restrictions have been applied under the plant quarantine act to all important dangers as they appear, and in this piecemeal fashion some 20 restrictive orders and quarantines are now in force against foreign plants and plant products. Such piecemeal action only can be taken, however, when the enemy is known, and gives no security against such unknown or unanticipated enemies as the San Jose scale, the oriental peach moth, and the alfalfa weevil.

NECESSITY OF GENERAL QUARANTINE.

It certainly would seem to be good business and practical common sense to stop as far as possible such dangerous introductions to the agriculture and horticulture of this country. This is the primary object of the action taken in Quarantine No. 37. The experts of this department are convinced that it will be possible very promptly to produce in this country all the plants prohibited by this quarantine, and this opinion has been indorsed by leading nurserymen and florists.

After having studied this subject for many years, and after giving earnest consideration and practical trial to the possible alternatives of inspection and disinfection of plant imports, the department and the country at large have reached the conclusion that the only possible solution of this problem, which is constantly becoming more serious with the widening of commerce, is in the policy of practical exclusion of all stock not absolutely essential to the horticultural, floricultural, and forestry needs of the United States. The conclusion is absolutely forced that no other system will give adequate protection to the great fruit and agricultural interests of the country, and these interests are so paramount as to fully warrant the restriction prescribed at this time in Quarantine No. 37.

The main lines of this quarantine are undoubtedly justified, but it is entirely proper at any time for the interests affected to make any suggestion of modification which may appeal to such interests as being warranted to meet essential needs and which can be granted without opening up dangers which Quarantine No. 37 is designed to guard against. Correspondingly, should it develop that the entry of any of the plants or classes of plants now permitted should be accompanied with dangers which can not be otherwise safeguarded, on such showing the restrictions must necessarily be extended to cover such plants.

In this connection the department now has prepared an amendment to regulation 3 permitting the use of sand, soil, or earth in packing the bulbs specified in item No. 1 of that regulation when such sand, soil, or earth has been previously sterilized in accordance with methods prescribed by the Federal Horticultural Board.

C. L. Marlatt,
Chairman of board.

NOTICE OF PUBLIC HEARING ON THE PROPOSED QUARANTINE OF PENNSYLVANIA, OR CERTAIN PORTIONS THEREOF, ON ACCOUNT OF THE POTATO WART.

Washington, D. C., *January 16, 1919.*

The Secretary of Agriculture has information that a dangerous plant disease infestation, namely, that by the potato wart (*Chrysophlyctis endobiotica*

Schilb.), new to and not heretofore widely prevalent or distributed within and throughout the United States, exists in Luzerne, Schuylkill, and Carbon Counties in the State of Pennsylvania.

It appears, therefore, that the State of Pennsylvania, or certain portions thereof, should be quarantined in accordance with section 8 of the plant quarantine act of August 20, 1912 (37 Stat., 315), as amended by act of Congress approved March 4, 1917 (39 Stat., 1134, 1165), and that the movement from said territory into other States, Territories, or Districts of potatoes, turnips, beets, and other root crops, living plants of any kind with earth about the roots, stable manure, and similar material liable to convey infested vegetation or soil, should be restricted or prohibited.

Notice is therefore hereby given that a public hearing will be held at the Department of Agriculture, Washington, D. C., room 11, Federal Horticultural Board, at 10 o'clock a. m., January 28, 1919, in order that any person interested in the proposed quarantine may appear and be heard either in person or by attorney.

This disease was discovered about the middle of September, 1918, distributed over a small area in the anthracite coal-mining region of Pennsylvania. A rather hasty survey of the district in which it was first found has revealed its presence in gardens of 27 cities and villages in Luzerne, Schuylkill, and Carbon Counties. The area in which most of the points of infection lie is approximately 18 miles long and 12 miles wide. This area is by no means agricultural; small gardens in the villages comprise the only lands in cultivation. The disease is thought to have come into Pennsylvania with a shipment of 12 carloads of inferior European potatoes in 1912. These potatoes were imported into the United States before the passage of the plant quarantine act of August 20 of that year. Wart is not known to exist in any other part of the United States.

The potato wart is probably the most destructive of all potato diseases. It is substantially limited to the potato, although it may attack other closely related plants of the nightshade family, to which the potato belongs. Soil once impregnated with it remains a source of contagion to future crops of potatoes for six to eight years or longer, even if potato culture be abandoned for such periods. It attacks the tubers and also the stems, causing irregular, warty outgrowths, beginning in the tender tissues near the eyes and enlarging until the entire potato may be changed into a black and worthless mass. The young galls are whitish or greenish, suggesting a cauliflower head. In the present outbreak the disease manifests itself in a very severe form, practically destroying the whole crop in many of the gardens affected.

The disease has been present in Europe for many years, and it is reported from Great Britain, Hungary, Germany, France, Italy, and Norway. Wart existed in portions of England at least 35 years ago.

[A press notice in regard to this hearing was also issued from the Office of Information of the United States Department of Agriculture.]

NOTICE OF PROPOSED QUARANTINE OF THE COMMON BARBERRY (BERBERIS VULGARIS) AND OTHER RUST-SUSCEPTIBLE SPECIES OF BERBERIS AND MAHONIA ON ACCOUNT OF THE BLACK STEM RUST OF WHEAT (PUCCINIA GRAMINIS).

The Secretary of Agriculture has information that the common barberry (*Berberis vulgaris*) and its horticultural varieties, as well as other species of Berberis and Mahonia are capable of harboring the black stem rust of wheat, oats, barley, rye, and many wild and cultivated grasses (*Puccinia graminis*) throughout much of the grain-growing area of the country and especially in the States of Nebraska, Iowa, Illinois, Indiana, Ohio, North Dakota, South Dakota, Minnesota, Kansas, Montana, Wisconsin, Michigan, Wyoming, Missouri, and Colorado. The prevalence of the common barberry throughout this area has been responsible to a considerable degree for the severity of the epidemics of black-stem rust that have frequently caused enormous losses of wheat and other cereals.

Through the cooperation of the Department of Agriculture with State officials, local organizations, and individuals, the susceptible species of Berberis and Mahonia have been very largely eradicated from the above-named States,

but these plants are still prevalent in many of the regions of the United States. It appears necessary, therefore, to quarantine the States of Alabama, Arizona, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Idaho, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Mississippi, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and the District of Columbia, in accordance with section 8 of the plant quarantine act of August 20, 1912 (37 Stat., 315), as amended by the act of Congress, approved March 4, 1917 (39 Stat., 1134, 1165), and to prohibit or regulate the movement from said States and District to the States first above named of all species and varieties of barberry and Mahonia susceptible to black-stem rust.

A public hearing will be held at room 11, Federal Horticultural Board, Washington, D. C., at 10 o'clock on February 24, 1919, in order that any person interested in the proposed quarantine may be heard either in person or by attorney.

[A press notice in regard to this hearing was also issued from the Office of Information of the United States Department of Agriculture.]

(T. D. 37867.) — PLANT QUARANTINE ACT. — COLLECTORS INSTRUCTED RELATIVE TO NOTICE OF QUARANTINE NO. 37, WITH REGULATIONS ISSUED BY THE DEPARTMENT OF AGRICULTURE UNDER DATE OF NOVEMBER 18, 1918, TO TAKE EFFECT ON AND AFTER JUNE 1, 1919.

TREASURY DEPARTMENT, *January 7, 1919.*

To collectors of customs:

Your attention is invited to copies of a circular entitled "Notice of Quarantine No. 37, with regulations governing the entry of nursery stock and other plants and seeds, to take effect on and after June 1, 1919," which have been forwarded to you by mail and by which you will be governed.

These regulations supersede the regulations governing the importation of nursery stock, effective July 1, 1916, which were promulgated in T. D. 36429, of May 23, 1916.

L. S. ROWE, *Assistant Secretary.*

LIST OF CURRENT QUARANTINE AND OTHER RESTRICTIVE ORDERS.

QUARANTINE ORDERS.

The numbers assigned to these quarantines indicate merely the chronological order of issuance of both domestic and foreign quarantines in one numerical series. The quarantine numbers missing in this list are quarantines which have either been superseded or revoked. For convenience of reference these quarantines are here classified as domestic and foreign.

DOMESTIC QUARANTINES.

Date palms.—Quarantine No. 6: Regulates the interstate movement of date palms or date-palm offshoots from Riverside County, Cal., east of the San Bernardino meridian; Imperial County, Cal.; Yuma, Maricopa, and Pinal Counties, Ariz.; and Webb County, Tex.; on account of the Parlatoria scale (*Parlatoria blanchardi*) and the Phoenicococcus scale (*Phoenicococcus marlatti*).

Cotton seed and cottonseed hulls.—Quarantine No. 9: Prohibits the importation of cotton seed and cottonseed hulls from the Territory of Hawaii on account of the pink bollworm.

Hawaiian fruits.—Quarantine No. 13, revised: Prohibits or regulates the importation from Hawaii of all fruits and vegetables, in the natural or raw state, on account of the Mediterranean fruit fly and the melon fly.

Sugar cane.—Quarantine No. 16: Prohibits the importation from Hawaii and Porto Rico of living canes of sugar cane, or cuttings or parts thereof, on account of certain injurious insects and fungus diseases.

Cotton.—Quarantine No. 23, revised: Regulates the movement of cotton from Hawaii to the continental United States, on account of the pink bollworm.

Five-leafed pines, Ribes and Grossularia.—Quarantine No. 26: Prohibits the interstate movement of five-leafed pines, currant and gooseberry plants from all States east of and including the States of Minnesota, Iowa, Missouri, Arkansas, and Louisiana to points outside of this area; prohibits, further, the interstate movement of five-leafed pines and black-currant plants to points outside the area comprising the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York, on account of the white-pine blister rust.

Sweet potato and yam.—Quarantine No. 30: Prohibits the movement from the Territories of Hawaii and Porto Rico into or through any other Territory, State, or District of the United States of all varieties of sweet potatoes and yams (*Ipomoea batatas* and *Dioscorea* spp.) regardless of the use for which the same are intended, on account of the sweet-potato weevil (*Cylas formicarius*) and the sweet-potato scarabee (*Euscepes batatae*).

Banana plants.—Quarantine No. 32: Prohibits the movement from the Territories of Hawaii and Porto Rico into or through any other Territory, State, or District of the United States of any species or variety of banana plants (*Musa* spp.), regardless of the use for which the same are intended, on account of two injurious weevils, *Rhabdocnemis obscurus* and *Metamasius hemipterus*.

Gipsy moth and brown-tail moth.—Quarantine No. 33: Regulates the movement interstate to any point outside of the quarantined towns and territory, or from points in the generally infested area to points in the lightly infested area, of stone or quarry products, and of the plants and the plant products listed therein. The quarantine covers portions of the New England States.

Japanese beetle.—Quarantine No. 35: Regulates the movement interstate to any point outside the townships of Delran, Chester, and Cinnaminson, Burlington County, N. J., of green corn, commonly called sweet or sugar corn, on account of the Japanese beetle (*Popillia japonica*).

European corn borer.—Quarantine No. 36: Prohibits the movement interstate to any point outside of the quarantined area of corn fodder or corn stalks, whether used for packing or otherwise, green sweet corn, roasting ears, corn on the cob, and corn cobs, on account of the European corn borer (*Pyrausta nubilalis*).

FOREIGN QUARANTINES.

Irish potato.—Quarantine No. 3: Prohibits the importation of the common or Irish potato from Newfoundland; the islands of St. Pierre and Miquelon; Great Britain, including England, Scotland, Wales, and Ireland; Germany; and Austria-Hungary, on account of the disease known as potato wart.

Mexican fruits.—Quarantine No. 5, as amended: Prohibits the importation of oranges, sweet limes, grapefruit, mangoes, achras sapotes, peaches, guavas, and plums from the Republic of Mexico, on account of the Mexican fruit fly.

Five-leafed pines, Ribes, and Grossularia.—Quarantine No. 7, as amended: Prohibits the importation from each and every country of Europe and Asia, and from the Dominion of Canada and Newfoundland, of all five-leafed pines and all species and varieties of the genera *Ribes* and *Grossularia*, on account of the white-pine blister rust.

Cotton seed and cottonseed hulls.—Quarantine No. 8, as amended: Prohibits the importation from any foreign locality and country, excepting only the locality of the Imperial Valley, in the State of Lower California, Mexico, of cotton seed (including seed cotton) of all species and varieties, and cottonseed hulls, on account of the pink bollworm. Cotton and cotton seed from the Imperial Valley may be entered under permit and regulation.

Seeds of avocado or alligator pear.—Quarantine No. 12: Prohibits the importation from Mexico and the countries of Central America of the seeds of the avocado or alligator pear, on account of the avocado weevil.

Sugar cane.—Quarantine No. 15: Prohibits the importation from all foreign countries of living canes of sugar cane, or cuttings or parts thereof, on account of certain injurious insects and fungus diseases. There are no restrictions on the entry of such materials into Hawaii and Porto Rico.

Citrus nursery stock.—Quarantine No. 19: Prohibits the importation from all foreign localities and countries of all citrus nursery stock, including buds, scions, and seeds, on account of the citrus canker and other dangerous citrus diseases. The term "citrus," as used in this quarantine, includes all plants belonging to the subfamily or tribe *Citratœ*.

European pines.—Quarantine No. 20: Prohibits, on account of the European pineshoot moth (*Evetria buoliana*), the importation from all European countries and localities of all pines not already excluded by Quarantine No. 7.

Indian corn or maize and related plants.—Quarantine No. 24, as amended: Prohibits the importation from southeastern Asia (including India, Siam, Indo-China, and China), Malayan Archipelago, Australia, New Zealand, Oceania, Philippine Islands, Formosa, Japan and adjacent islands in the raw or unmanufactured state of seed and all other portions of Indian corn or maize (*Zea mays* L.), and the closely related plants, including all species of Teosinte (*Euchlaena*), Job's tears (*Coix*), *Polytoca*, *Chionachne*, and *Sclerachne*, on account of the downy mildews and *Physoderma* diseases of Indian corn, except that Indian corn or maize may be imported on compliance with the conditions prescribed in the regulations of the Secretary of Agriculture.

Citrus fruit.—Quarantine No. 28: Prohibits the importation from eastern and southeastern Asia (including India, Siam, Indo-China, and China), the Malayan Archipelago, the Philippine Islands, Oceania (except Australia, Tasmania, and New Zealand), Japan (including Formosa and other islands adjacent to Japan), and the Union of South Africa, of all species and varieties of citrus fruits, on account of citrus canker, except that oranges of the mandarin class (including satsuma and tangerine varieties) may be imported on compliance with the conditions prescribed in the regulations of the Secretary of Agriculture.

Sweet potato and yam.—Quarantine No. 29: Prohibits the importation for any purpose of any variety of sweet potatoes or yams (*Ipomoea batatas* and *Dioscorea* spp.) from all foreign countries and localities, on account of the sweet potato weevils (*Cylas* spp.) and the sweet potato scarabee (*Euscepes batatae*).

Banana plants.—Quarantine No. 31: Prohibits the importation for any purpose of any species or variety of banana plants (*Musa* spp.), from all foreign

countries and localities, on account of the banana root borer (*Cosmopolites sordidus*).

Bamboo.—Quarantine No. 34: Prohibits the importation for any purpose of any variety of bamboo seed, plants, or cuttings thereof capable of propagation, including all genera and species of the tribe *Bambuseae*, from all foreign countries and localities, on account of dangerous plant diseases, including the bamboo smut (*Ustilago shiraiana*). This quarantine order does not apply to bamboo timber consisting of the mature dried culms or canes which are imported for fishing-rod, furniture-making, or other purposes, or to any kind of article manufactured from bamboo, or to bamboo shoots cooked or otherwise preserved.

Nursery stock, plants, and seeds.—Quarantine No. 37, with regulations (effective on and after June 1, 1919): Prohibits the importation of nursery stock and other plants and seeds from all foreign countries and localities, on account of certain injurious insects and fungous diseases, except as provided in the regulations. Under this quarantine the following plants and plant products may be imported without restriction: Fruits, vegetables, cereals, and other plant products imported for medicinal, food, or manufacturing purposes, and field, vegetable, and flower seeds. The entry of the following plants for propagation is permitted under restriction: Lily bulbs, lily of the valley, narcissus, hyacinths, tulips, and crocus; stocks, cuttings, scions, and buds of fruits; rose stocks, including manetti, multiflora, brier rose, and rosa rugosa; nuts, including palm seeds; seeds of fruit, forest, ornamental, and shade trees, seeds of deciduous and evergreen ornamental shrubs, and seeds of hardy perennial plants.

OTHER RESTRICTIVE ORDERS.

The regulation of the entry of nursery stock from foreign countries into the United States was specifically provided for in the plant-quarantine act. The act further provides for the similar regulation of any other class of plants or plant products when the need therefor shall be determined. The entry of the plants and plant products listed below has been brought under such regulation:

Nursery stock.—Nursery stock is entered under regulations requiring a permit, foreign certification and marking, reporting arrival and distribution, and inspection at destination. The term "nursery stock" includes all field-grown florists' stock, trees, shrubs, vines, cuttings, grafts, scions, buds, fruit pits and other seeds of fruit and ornamental trees or shrubs, and other plants and plant products for propagation, except field, vegetable, and flower seeds, bedding plants, and other herbaceous plants, bulbs, and roots. (These regulations will remain in force until June 1, 1919. See Quarantine No. 37.)

Irish potatoes.—The importation of Irish potatoes is prohibited altogether from the countries enumerated in the potato quarantine. Potatoes may be admitted from other foreign countries in accordance with the order of December 22, 1913, bringing the entry of potatoes under restriction on account of injurious potato diseases and insect pests. The following countries have qualified for the importation of potatoes under the regulations issued under said order: Denmark, Holland, Belgium, Cuba, Bermuda, and the Dominion of Canada. The regulations issued under this order have been amended so as to permit, free of any restrictions whatsoever under the plant-quarantine act, the importation of potatoes from any foreign country into the Territories of Porto Rico and Hawaii for local use only and from the Dominion of Canada and Bermuda into the United States or any of its Territories or Districts.

Avocado, or alligator pear.—The order of February 27, 1914, prohibits the importation from Mexico and the countries of Central America of the fruits of the avocado, or alligator pear, except under permit and in accordance with the other provisions of the regulations issued under said order, on account of the avocado weevil. Entry is permitted only through the port of New York and is limited to the large, thick-skinned variety of the avocado. The importation of the small, purple, thin-skinned variety of the fruit of the avocado and of avocado nursery stock under 18 months of age is prohibited.

Cotton.—The order of April 27, 1915, prohibits the importation of cotton from all foreign countries and localities, except under permit and in accordance with the other provisions of the regulations issued under said order, on account of injurious insects, including the pink bollworm. These regulations apply in part to cotton grown in and imported from the Imperial Valley, in the State of Lower California, in Mexico.

Corn.—The order of March 1, 1917 (Amendment No. 1, with Regulations, to Notice of Quarantine No. 24), prohibits the importation of Indian corn or

maize in the raw or unmanufactured state from the countries and localities listed in Notice of Quarantine No. 24, except under permit and in accordance with the other provisions of the regulations issued under said order, on account of injurious diseases of Indian corn.

Cottonseed products.—The order of June 23, 1917, prohibits the importation of cottonseed cake, meal, and all other cottonseed products, except oil, from all foreign countries, and a second order of June 23, 1917, prohibits the importation of cottonseed oil from Mexico except under permit and in accordance with the other provisions of the regulations issued under said orders, on account of injurious insects, including the pink bollworm.

Citrus fruits.—The order of June 27, 1917 (Notice of Quarantine No. 28, with Regulations), prohibits the importation from the countries and localities listed therein of all species and varieties of citrus fruits, excepting only oranges of the mandarin class (including satsuma and tangerine varieties), on account of the citrus-canker disease. Oranges of the mandarin class (including satsuma and tangerine varieties) may be imported under permit and in accordance with the other provisions of the regulations issued under said order.

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